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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,428	03/02/2004	William S. Wheat	8540G-83/COB	5404
27572 7590 12/14/2009 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303				
EXAMINER				
LEE, CYNTHIA K				
ART UNIT		PAPER NUMBER		
1795				
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12/14/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/791,428

Applicant(s)

WHEAT ET AL.

Examiner

CYNTHIA LEE

Art Unit

1795

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-34 and 47-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-34 and 47-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Response to Arguments

This Office Action is responsive to Arguments filed on 8/21/2009. Claims 23-34 and 47-54 are pending. Applicant's arguments have been fully considered. Claims 23-26, 29 are finally rejected for reasons stated herein below. Claims 27, 28, 30-34, 47-54 are allowed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 23, 24, 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Mufford (US 6186254).

Refer to Fig. 1. Mufford discloses a fuel cell system comprising a fuel cell stack (30), an air supply (160), a water supply (175), a hydrogen supply (145), a heater (70) connected to an output of said stack to warm the stack and water supply and is external to the stack.

The heater is a resistor (4:23) (applicant's claim 24).

The hydrogen supply system 145 and oxidant (in the illustrated embodiment the oxidant is air) supply system 160 are under the control of PLC 250 (8:44-47). The

controller necessarily controls the hydrogen and air supply to power the heater to warm the stack because the heater is powered by the fuel cell.

In operation, temperature sensor 255 provides the primary indicator of operating temperature of the fuel cell stack 30. The temperature sensed by temperature sensor 255 is used by the programmable logic controller 250 to determine the amount of heating or cooling of the cooling medium that is required to maintain the temperature of the fuel cell stack in its optimum operating range (7:33-35) (applicant's claim 26).

Regarding the limitation "when the vehicle is not running", the Examiner notes that starting the fuel cell is not synonymous to starting the motor, and thus the fuel cell is capable of heating the heater with or without the vehicle motor running.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mufford (US 6186254) as applied to claim 23, in view of Nakanishi (US 6592741).

Mufford discloses all the elements of claim 23 and are incorporated herein. Mufford does not disclose the element of claim 25. Nakanishi teaches a hydrogen reactor 23 provided with a hydrogen pressure sensor 11. Based on a value detected by the hydrogen pressure sensor 11, the amount of hydrogen produced in the reactor

23 can be detected. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a hydrogen pressure sensor and connect it to the controller of Mufford for the benefit of being able to know the amount of hydrogen on hand.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mufford (US 6186254) as applied to claim 23, in view of Wells (US 2004/0185316) and Ballentine (US 2002/0192467).

Mufford discloses all the elements of claim 23 and are incorporated herein. Mufford does not disclose an ambient temperature sensor. Wells teaches an ambient temperature sensor to monitor the ambient air temperature surrounding the fuel cell system [0062]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add an ambient temperature sensor to monitor the ambient air temperature surrounding the fuel cell, as taught by Wells.

Mufford does not disclose a water tank sensor. Mufford discloses a water tank and a coolant path supplied by the water in the water tank (6:14-15). Mufford discloses a temperature sensor of the cooling medium 255 (fig 1 and 15-20). Ballentine teaches a water temperature sensor [0059]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a water temperature sensor to the system of Mufford for the benefit of being able to detect the water temperature to better control the temperature of the cooling medium.

Allowable Subject Matter

Claims 27, 28, 30-34, 47-53 are allowable.

The following is a statement of reasons for allowable claims:

Prior art does not suggest nor disclose "where said controller determines whether heating is necessary based on said stack temperature if said hydrogen pressure signal exceeds a first pressure value" (applicant's claim 27 and 47) or "wherein said controller uses said stack temperature signal, said ambient temperature signal and said water temperature signal to access a lookup table to determine whether heating is necessary when said pressure signal does not exceed a first pressure value" (applicant's claim 30).

Response to Arguments

Applicant's arguments filed 8/21/2009 have been fully considered but they are not persuasive.

Applicant argues that Mufford fails to disclose a controller that controls a hydrogen supply and an air supply to power a heater to warm a fuel cell stack and a water supply while a vehicle is not running as claim 23 explicitly recites.

Regarding the limitation "when the vehicle is not running", Mufford states that "Fuel cell power may be advantageously used to power the resistor soon after start-up to bring the fuel cell stack within the preferred operating temperature range and during operation to improve fuel cell performance..." (4:39-41).

The Examiner notes that start-up of the fuel cell is not synonymous to starting the motor, and thus the fuel cell is capable of operating (and thus heating the heater) with or without the vehicle motor running.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Lee whose telephone number is 571-272-8699. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cynthia Lee/
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art
Unit 1795